

II. REMARKS

Claim 13 has been cancelled without prejudice. New independent claim 27 incorporates subject matter from previous claims 1 and 13. In fact, new independent claim 27 corresponds to previous claim 13 rewritten in independent form. Thus, new claim 27 has the same scope as previous claim 13.

Claims 14-17 and 19 have been amended to depend upon new claim 27, which has no further limiting effect on the scope of these claims.

The present amendment adds no new matter to the above-captioned application.

Filed herewith is Declaration under 37 C.F.R. § 1.132 by Seiichi AGAKI (hereafter, the “Akagi Declaration), which submits experimental data and expert testimony establishing the fact that the anthracene compound of Formula 9 of JP 05-283560 is not the same compound as the dihydroanthracene epoxy resin compound according to General Formula (I) recited by independent claims 1 and 27 of the above-captioned application.

A. The Invention

The present invention pertains broadly to a sealant epoxy-resin molding material, such as may be used to seal electronic component devices. In accordance with an embodiment of the present invention, a sealant epoxy-resin molding material is provided that has features recited by independent claim 1. In accordance with another embodiment of the present invention, a sealant epoxy-resin molding material is provided that has features recited by independent claim 27. Various other embodiments, in accordance with the present invention, are recited by the dependent claims.

An advantage provided by the various embodiments, in accordance with the present invention, is that a sealant epoxy-resin molding material is provided that is flame retardant and that also has good characteristics with respect to moldability, reflow resistance, and

moisture resistance, and that can undergo high-temperature storage. Another advantage provided by a sealant epoxy-resin molding material of the present invention is that the material is a non-halogenated, non-antimony containing flame retardant.

B. The Rejections

Claims 1, 3-5 and 11 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as unpatentable over claims 1 and 13-18 of co-pending U.S. Patent Application No. 11/572,162 in view of Nakamura et al. (JP 05-283560). Claims 1, 3-5 and 11 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as unpatentable over claims 1 and 13-18 of co-pending U.S. Patent Application No. 11/995,372 in view of Nakamura et al. (JP 05-283560). Claims 1, 3-6 and 11 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as unpatentable over claims 1, 8-11 and 13-16 of co-pending U.S. Patent Application No. 12/097,319 in view of Nakamura et al. (JP 05-283560). Claims 1, 3-5 and 11 stand provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as unpatentable over claims 1, 15, 16 and 18-20 of co-pending U.S. Patent Application No. 11/572,155 in view of Nakamura et al. (JP 05-283560).

Claims 1-12, 18-20, 22-24 and 26 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Ikezawa et al. (U.S. Patent Application Publication No. US 2003/0201548, hereafter the “Ikezawa ‘548 Publication”) in view of Nakamura et al. (JP 05-283560, hereafter the “Nakamura Document”). Claims 13-17, 21 and 25 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the Ikezawa ‘548 Publication in view of the Nakamura Document, and further in view of Isshiki et al. (U.S. Patent 6,040,395, hereafter the “Isshiki Patent”) and “applicant’s submission” (Applicants’ specification, page 33, hereafter “Applicants’ Allegedly Admitted Prior Art” or “AAAPA”).

Claims 1, 3-5 and 11 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent Application Publication No. US 2009/0143511 (corresponding to co-pending U.S. Patent Application No. 11/572,162) in view of the Nakamura Document.

Claims 1, 3-5 and 11 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent Application Publication No. US 2009/0137717 (corresponding to co-pending U.S. Patent Application No. 11/995,372) in view of the Nakamura Document. Claims 1, 3-6 and 11 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent Application Publication No. US 2009/0062430 (corresponding to U.S. Patent Application No. 12/097,319) in view of the Nakamura Document. Claims 1, 3-5 and 11 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent Application Publication No. US 2008/0039556 (corresponding to U.S. Patent Application No. 11/572,155) in view of the Nakamura Document.

Applicants respectfully traverse the Examiner's rejections and request reconsideration of the above-captioned application for the following reasons.

C. Applicants' Arguments

i. The Provisional Obviousness-type Double Patenting Rejections

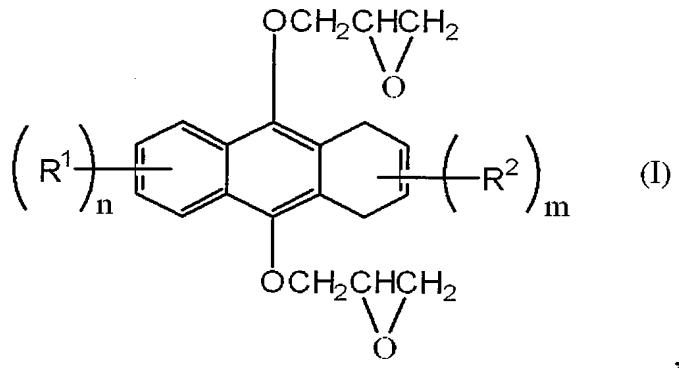
Applicants traverse the Examiners obviousness-type double patenting rejections based on co-pending U.S. Patent Application Nos. 11/572,155, 11/572,162, 11/995,372, and 12/097,319 because the rejections are not ripe since no claim of the co-pending applications have been allowed. In addition, the Examiner's provisional obviousness-type double patenting rejections are untenable and must be withdrawn because the Examiner has not compared the claims of the present application to the claims of the co-pending U.S. Patent Application Nos. 11/572,155, 11/572,162, 11/995,372, and 12/097,319.

The Federal Circuit has ruled that in order to justify a double patenting rejection an analysis of the claims at issue are required, and not an analysis limited to the disclosure of the patents whose claims are relied upon to demonstrate double patenting. General Foods Corp. v. Studiengesellschaft Kohle mbH, 23 U.S.P.Q.2d 1839, 1846 (Fed. Cir. 1992). The disclosure of the patent cited in support of the double patenting rejection cannot be used as though it were prior art. Id. In particular, the Federal Circuit has held that an obviousness-type double patenting rejection involves two inquiries: first, is the same invention claimed twice, and second, if not, does the pending claim define merely an obvious variation of the patented claim. In re Goodman, 29 U.S.P.Q.2d 2010, 2016 (Fed. Cir. 1993).

In the present case, the Examiner has not established a prima facie case of obviousness-type double patenting because the Examiner has not compared the claims of U.S. Patent Application Nos. 11/572,155, 11/572,162, 11/995,372, and 12/097,319 to the claims of the present application. For all of the above reasons, the Examiner's provisional obviousness-type double patenting rejections are untenable and must be withdrawn.

ii. The Rejections Under 35 U.S.C. § 103(a)

A prima facie case of obviousness requires a showing that the scope and content of the prior art teaches each and every element of the claimed invention, and that the prior art provides some teaching, suggestion or motivation, or other legitimate reason, for combining the references in the manner claimed. KSR International Co. v. Teleflex Inc., 127 S.Ct. 1727, 1739-41 (2007); In re Oetiker, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992). In this case, the Examiner has failed to establish a prima facie case of obviousness against independent claims 1 and 27 because the combination of the Ikezawa Publication, the Nakamura Document, the Isshiki Patent, and the AAAPA fails to teach each and every limitation of these claims. In particular, neither the Ikezawa Publication, the Nakamura Document, the Isshiki Patent nor the AAAPA teaches, or suggests, a compound represented by the following General Formula (I):



as recited by independent claims 1 and 27.

iii. U.S. Patent Application Publication No. US 2009/0143511

U.S. Patent Application Publication No. US 2009/0143511 (corresponding to co-pending U.S. Patent Application No. 11/572,162), hereafter referred to as the “511 Publication,” and the above-captioned application were commonly owned by Hitachi Chemical Company, Ltd., Tokyo, Japan, at the time the present invention was made (See “Exhibit AD,” filed herewith, and which is a webpage obtained from the United States Patent and Trademark (USPTO) PAIRS database corresponding to U.S. Patent Application No. 11/572,162 and showing that U.S. Patent Application No. 11/572,162 is assigned to Hitachi Chemical Company, Ltd.). Therefore, the ‘511 Publication is not valid prior art against the claims of the above-captioned application for the purposes of establishing obviousness under 35 U.S.C. § 103(a) pursuant to 35 U.S.C. § 103(c).

iv. U.S. Patent Application Publication No. US 2009/0137717

U.S. Patent Application Publication No. US 2009/0137717 (corresponding to co-pending U.S. Patent Application No. 11/995,372), hereafter referred to as the “717 Publication,” is entitled to priority from International Application No. PCT/JP2006/313994,

which was filed on July 13, 2006, and has a “371 Date” of January 11, 2008. The presently claimed invention is entitled to priority rights to at least March 3, 2005 because the present application is a National Phase Application in the United States of International Patent Application No. PCT/JP2005/003592 filed March 3, 2005, which claims priority on Japanese Patent Application No. 2005-059106, filed March 3, 2004. Therefore, the ‘717 Publication is not valid prior art for any purpose against the claims of the above-captioned application.

v. U.S. Patent Application Publication No. US 2009/0062430

U.S. Patent Application Publication No. US 2009/0062430 (corresponding to U.S. Patent Application No. 12/097,319), hereafter referred to as the “430 Publication,” is entitled to priority from International Application No. PCT/JP2006/324442, which was filed on December 7, 2006, and has a “371 Date” of June 13, 2008. The presently claimed invention is entitled to priority rights to at least March 3, 2005 because the present application is a National Phase Application in the United States of International Patent Application No. PCT/JP2005/003592 filed March 3, 2005, which claims priority on Japanese Patent Application No. 2005-059106, filed March 3, 2004. Therefore, the ‘430 Publication is not valid prior art for any purpose against the claims of the above-captioned application.

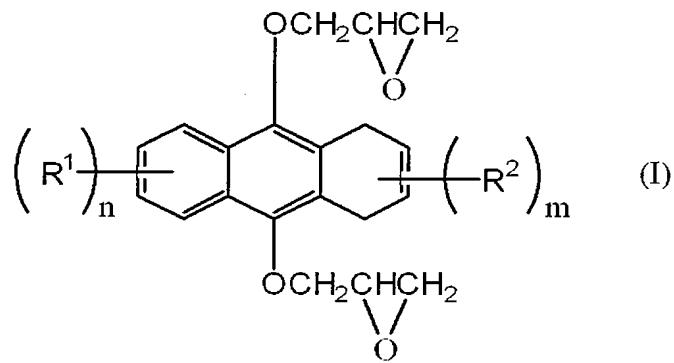
vi. U.S. Patent Application Publication No. US 2009/0039556

U.S. Patent Application Publication No. US 2008/0039556 (corresponding to U.S. Patent Application No. 11/572,155), hereafter referred to as the “556 Publication,” and the above-captioned application were commonly owned by Hitachi Chemical Company, Ltd., Tokyo, Japan, at the time the present invention was made. (See “Exhibit AC,” filed herewith, and which is a webpage obtained from the United States Patent and Trademark (USPTO) PAIRS database corresponding to U.S. Patent Application No. 11/572,155 and showing that

U.S. Patent Application No. 11/572,155 is assigned to Hitachi Chemical Company, Ltd.). Therefore, the ‘556 Publication is not valid prior art against the claims of the above-captioned application for the purposes of establishing obviousness under 35 U.S.C. § 103(a) pursuant to 35 U.S.C. § 103(c).

vii. The Ikezawa '548 Publication

The Ikezawa ‘548 Publication discloses “epoxy resin molding material for sealing,” wherein the encapsulating epoxy resin molding material comprises: (A) an epoxy resin, (B) a curing agent, and (C) a silane coupling agent having a secondary amino group or (D) a phosphate, and semiconductor devices encapsulated therein (See Abstract of the Ikezawa ‘548 Publication). While the Ikezawa ‘548 Publication discloses in ¶ [0070] a list of epoxy resins suitable for use as component (A) of Ikezawa’s encapsulating epoxy resin molding material, the Examiner admits that the Ikezawa ‘548 Publication does not teach, or suggest, “the epoxy resin (A) contains a compound represented by the following General Formula (I):



wherein...n is an integer of 0 to 4...and m is an integer of 0 to 6” as recited by independent claim 1 (Office Action, dated August 21, 2009, at 15, lines 1-2; and Office Action, dated August 13, 2008, at 5, lines 4-7). The Examiner also admits that the Ikezawa ‘548 Publication does not teach, or suggest, “a silicon-containing polymer” as recited by claim 13

(Office Action, dated August 21, 2009, at 16, lines 4-6; and Office Action, dated August 13, 2008, at 6, lines 8-10).

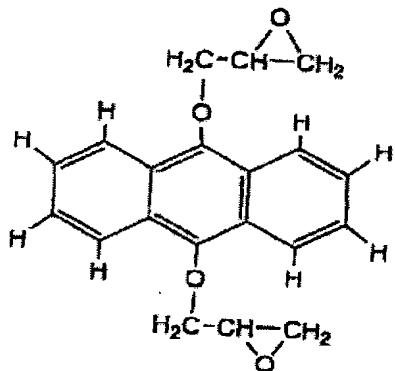
viii. The Nakamura Document

The Nakamura Document discloses an epoxy resin composition for semiconductor closure, wherein 9,10-dihydroxyanthracene is reacted with epichlorohydrin to produce a compound having the structural formula shown in Formula 9 below (Nakamura Document, ¶¶ [0001] and [0044], see also English Machine translation of the Nakamura Document, downloaded from Japanese Patent Office database on August 5, 2008, of record as “Exhibit A”; and Declaration under 37 C.F.R. § 1.132 by Ryouichi Ikezawa, dated July 22, 2009, of record, and hereafter the “Ikezawa Declaration,” ¶ 9). A person of ordinary skill in the art would instantly realize that the compound,



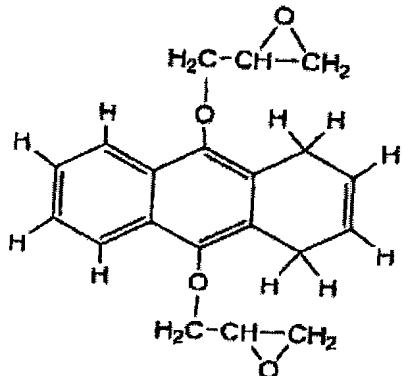
[Formula 9],

of Formula 9 corresponds to CAS Registry Number: 155665-67-1 (See, e.g., <http://stneasy-japan.cas.org/tmp/20031110/174338-1056700614-300/409740480.html>, downloaded on November 11, 2003, one page, of record as “Exhibit B”), and has the chemical name 2,2’-[9,10-anthracenediylbis(oxymethylene)]bis-oxirane, and the following chemical structure:



(Ikezawa Declaration, ¶ 9; and Akagi Declaration, ¶¶ 11 and 12).

A person of ordinary skill in the art would also instantly realize that a compound of General Formula (I), wherein m = 0 and n = 0, in accordance with Applicants' claimed invention, has the following structural formula:



(Ikezawa Declaration, ¶ 8; and Akagi Declaration, ¶ 7). A person of ordinary skill in the art would realize that this compound, employed in Applicants' invention, corresponds to CAS Registry Number: 848667-77-6 (See, e.g., STN Tokyo database search results, three pages, of record as "Exhibit C"), which has the chemical name of 1,4-dihydro-9,10-anthracenediol, and which is a polymer with (chloromethyl) oxirane (Ikezawa Declaration, ¶ 8; and Akagi Declaration, ¶ 7). In other words, a person of ordinary skill in the art would instantly realize that the compound disclosed by the Nakamura Document as "Formula 9" is an anthracene

compound that has three aromatic rings, and a person of ordinary skill in the art would instantly realize that the compound employed by the present invention, as recited by independent claim 1, is a dihydrogenated¹ or reduced anthracene compound that is a different compound altogether from that of Nakamura's "Formula 9" (Ikezawa Declaration, ¶¶ 8-11 and 15; and Akagi Declaration, ¶¶ 6-14 and 26).

Furthermore, the fact that the compound of Nakamura's Formula 9 is a substantially different compound from that of General Formula (I) of the present invention is supported by the Chemical Abstracts Society's (CAS) separate cataloguing of these compounds (Ikezawa Declaration, ¶¶ 8, 9 and 12). It is an additional fact that these two substantially different compounds are synthesized differently. For example, the compound represented by General Formula (I) can be synthesized/manufactured with ease, whereas the synthesis of a compound of Nakamura's Formula 9 is more difficult because its precursor compound is unstable and easily oxidized (Ikezawa Declaration, ¶ 13). Consequently, it is difficult to manufacture the compound of Nakamura's Formula 9 on an industrial level, although it is possible to synthesize the compound of Nakamura's Formula 9 when performed on a smaller scale in a laboratory (Ikezawa Declaration, ¶ 13). The fact that the compound of General Formula (I) may be synthesized in large amounts, whereas the compound of Nakamura's Formula 9 must be synthesized in smaller batches due to the instability of the precursor compound is additional evidence showing that the compound of General Formula (I) is not the same compound as that of Nakamura's Formula 9.

In addition, sealant epoxy-resin molding material made using a dihydrogenated anthracene epoxy resin compound in accordance with the present invention has substantially

¹ In Amendment (B) filed December 15, 2008, Applicants inadvertently mischaracterized the compound of General Formula (I) as "dehydrogenated" as a result of a typographical error resulting from Applicants' attorney's word processing program that autocorrected "dihydrogenated" as --dehydrogenated--. As discussed in the present paper, the compounds of General Formula (I) are "dihydrogenated" or reduced anthracene compounds.

different properties than sealant epoxy-resin molding material made using anthracene epoxy resin disclosed by the Nakamura Document (Akagi Declaration, ¶¶ 17-26). In particular, Applicants have shown that sealant epoxy-resin molding material made using a dihydrogenated anthracene epoxy resin compound in accordance with the present invention has substantially improved flowability and moldability properties over sealant epoxy-resin molding material made using anthracene epoxy resin disclosed by the Nakamura Document (Akagi Declaration, ¶¶ 17-26).

However, these are not the only facts showing that Nakamura's compound of Formula 9 is not the same compound as recited by claim 1 of the above-captioned application. The effect of the present invention is substantially different from that of Nakamura's disclosure. As described in ¶ [0008] of Applicants' original specification, a non-halogenated, non-antimony sealant epoxy-resin molding material contains a compound of "General Formula (I)," and is superior in flame resistance while retaining desired properties with respect to moldability, reflow resistance, moisture resistance and high-temperature storage (Ikezawa Declaration, ¶ 14). On the other hand, the Nakamura Document discloses that the epoxy resin disclosed therein contains an anthracene compound, as shown by Formula 9, and exhibits resistance to a temperature cycle test ("TCT"), and crack resistant characteristics; furthermore, Nakamura's objectives are substantially different from those of the presently claimed invention (Ikezawa Declaration, ¶ 14).

The Nakamura Document discloses that "[c]oupling agents, such as fire retardant, such as antimonous oxide and the phosphorous system compound, paints, a silane coupling agent, etc." can be included in the epoxy resin composition (See Nakamura Document, ¶ [0029], and Exhibit A, ¶ [0029], and Ikezawa Declaration, ¶ 14). In other words, the Nakamura Document does not teach, or even suggest, the use of its anthracene compound as a flame retardant, which is a fact that would be appreciated by a person of ordinary skill in

the art (Ikezawa Declaration, ¶¶ 14 and 15). Furthermore, it is a fact that the anthracene compound of Formula 9 of the Nakamura Document is not a dihydrogenated anthracene compound in accordance with Formula (I) recited by claim 1, nor is Nakamura's anthracene compound equivalent to a dihydrogenated anthracene compound as claimed (Akagi Declaration, ¶¶ 6-14 and 17-26).

For all of the above reasons, Applicants have shown that the anthracene compound disclosed by the Nakamura Document as "Formula 9" is not the same compound as the dihydroanthracene epoxy resin compound of "General Formula (I)" as recited by independent claim 1.

The Examiner admits that the Nakamura Document does not teach, or suggest, "a silicon-containing polymer" as recited by claim 13 (Office Action, dated August 21, 2009, at 16, lines 4-6; and Office Action, dated August 13, 2008, at 6, lines 8-10).

ix. The Isshiki Patent

The Isshiki Patent discloses "electrical components and method for the fabrication thereof," which pertains to a primer that improves adherence of a cured resin sealant to a cured silicone coating on an electrical element, wherein the primer is selected from the group consisting of: (i) a mixture of components (a) and (b), (ii) a reaction mixture of components (a) and (b), (iii) component (c), (iv) component (c) and a mixture of components (a) and (b), and (v) component (c) and a reaction mixture of components (a) and (b), where component (a) is silanol-functional organopolysiloxane; component (b) is epoxy-functional organoalkoxysilane; and component (c) is organopolysiloxane with the average unit formula: $(R^1SiO_{3/2})_a(R^2_2 SiO_{2/2})_b(R^2_3 SiO_{1/2})_c(R^3O_{1/2})_d$ where R^1 is an epoxy-functional monovalent organic group; each R^2 is independently a monovalent hydrocarbon group, R^3 is selected from the group consisting of hydrogen and alkyl groups of 1 to 4 carbon atoms; a, b, and d

are each a positive number; and c is 0 or a positive number (See Abstract of the Isshiki Patent).

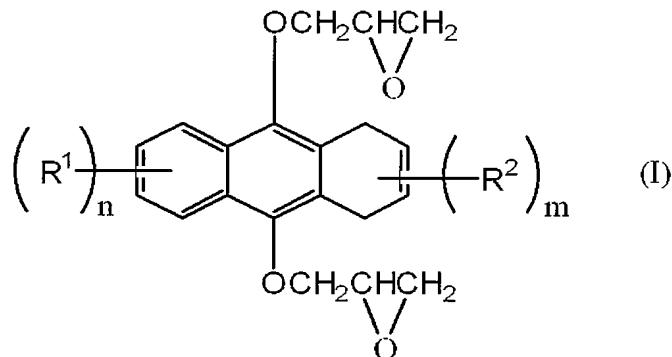
x. The AAAPA

The AAAPA is directed to “AY42-119,” a product disclosed on page 33 of Applicant’s specification as originally filed.

xi. Summary of the Disclosures

As an initial matter, U.S. Patent Application Publication No. US 2009/0062430 and U.S. Patent Application Publication No. US 2009/0137717 are not valid prior art against the claims of the above-captioned application for any reason. Furthermore, the subject matter of U.S. Patent Application Publication No. US 2009/0143511, U.S. Patent Application Publication No. US 2009/0137717, U.S. Patent Application Publication No. US 2009/0062430, and U.S. Patent Application Publication No. US 2008/0039556 were commonly owned at the time the present invention was made. Consequently, the ‘511 Publication and the ‘556 Publication are not valid prior art against the claims of the presently claimed invention. See 35 U.S.C. § 103(c).

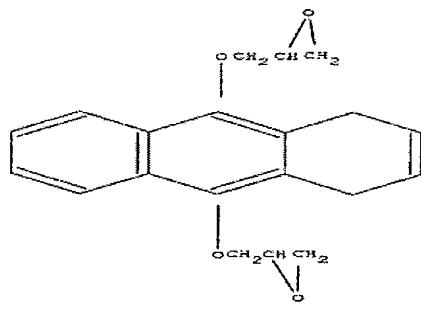
The combination of the Ikezawa ‘548 Publication, the Nakamura Document, the Isshiki Patent, and the AAAPA fails to teach, or even suggest, “the epoxy resin (A) contains a compound represented by the following General Formula (I):



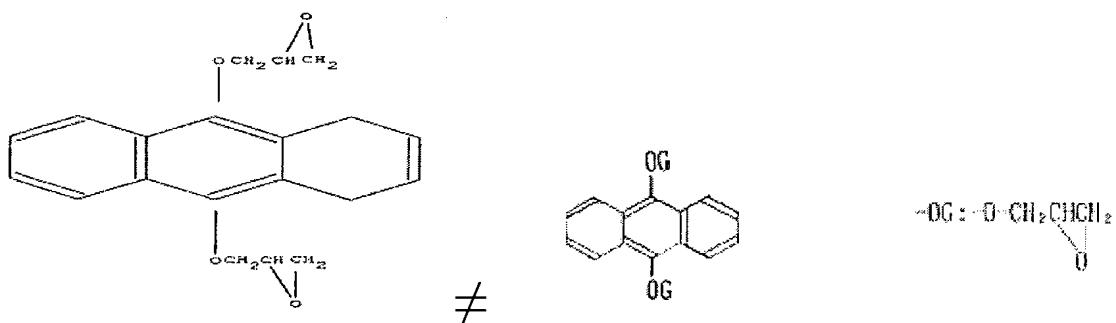
wherein...n is an integer of 0 to 4...and m is an integer of 0 to 6" as recited by independent claims 1 and 27.

For all of the above reasons, the Examiner has failed to establish a prima facie case of obviousness against claims 1-12 and 14-27 of the above-captioned application.

While the Examiner contends that the Nakamura Document discloses a dihydrogenated or reduced anthracene compound having the formula



(See, e.g. Office Action, mailed August 21, 2009, at 3, line 20, to 4, line 2; and Office Action, mailed March 30, 2009, at 2-3), the Examiner's contention is blatantly flawed because



as would be instantly appreciated by a person of ordinary skill in the art (Ikezawa Declaration, ¶ 11; and Akagi Declaration, ¶ 15). Applicants contend that the Examiner's obviousness rejection is predicated by a substantial misrepresentation on the Examiner's part regarding the compounds disclosed by the Nakamura Document (Akagi Declaration, ¶¶ 13, 16 and 26). Consequently, the Examiner's obviousness rejection is facially flawed, untenable, and must be withdrawn.

xii. No Legitimate Reason to Combine Disclosures and No Reasonable Expectation of Success If the Disclosure Were Combined

A proper rejection under Section 103 also requires showing (1) that a person of ordinary skill in the art would have had a legitimate reason to attempt to make the composition or device, or to carry out the claimed process, and (2) that the person of ordinary skill in the art would have had a reasonable expectation of success in doing so. PharmaStem Therapeutics, Inc. v. ViaCell, Inc., 491 F.3d 1342, 1360 (Fed. Cir. 2007). In this case, the Examiner has failed to establish both a legitimate reason to justify the combination of the Ikezawa '548 Publication with the Nakamura Document, the Isshiki Patent and the AAAPA, and the Examiner has fail to demonstrate that a person of ordinary skill in the art would have had a reasonable expectation of success of arriving at Applicants' claimed invention even if the combination was made.

As discussed above, the Nakamura Document does not teach, or even suggest, the use of its anthracene compound as a flame retardant (See, e.g., Ikezawa Declaration, ¶¶ 14 and 15). Therefore, a person of ordinary skill in the art would have had no legitimate reason to employ the anthracene compound disclosed by the Nakamura Document in the resin molding material disclosed by the Ikezawa '548 Publication. Furthermore, even assuming the Examiner had established a legitimate reason for making the combination (which is an

invalid assumption), a person of ordinary skill in the art would have had no reasonable expectation of success of obtaining a “sealant epoxy-resin molding material” that has the properties exhibited by the sealant epoxy-resin molding material of Applicants’ claimed invention because the compound of Nakamura’s “Formula 9” is a substantially different compound (i.e., an anthracene compound) from that of “General Formula (I)” recited by independent claim 1, which pertains to a dihydrogenated or reduced anthracene compound (Akagi Declaration, ¶¶ 6-14 and 17-26).

In sum, the combination of the Ikezawa ‘548 Publication, the Nakamura Document, the Isshiki Patent and the AAAPA would include an anthracene compound and not a dihydrogenated anthracene compound as claimed. Consequently, a person of ordinary skill in the art would have had absolutely no expectation of success of arriving at Applicants’ claimed invention even if the combination of the Ikezawa ‘548 Publication, the Nakamura Document, the Isshiki Patent and the AAAPA was made. In addition, the Examiner has failed to adduce any legitimate reason whatsoever to employ a dihydrogenated anthracene compound in place of the anthracene compound disclosed by the Nakamura Document.

For all of the above reasons, the Examiner has failed to establish a prima facie case of obviousness against claims 1-12 and 14-27 of the above-captioned application.

xiii. Applicants' Evidence of Superior and Unexpected Results

When an applicant adduces specific data demonstrating substantially improved results, and states that the results are unexpected, then in the absence of evidence to the contrary, applicant has established unexpected results sufficient to prove the invention is nonobvious. In re Soni, 34 U.S.P.Q.2d 1684, 1687-88 (Fed. Cir. 1995). The invention need only be compared to the closest prior art, In re Johnson, 223 U.S.P.Q. 1260, 1264 (Fed. Cir. 1984), however, it is acceptable to compare the invention to subject matter that is closer to

the invention than the closest prior art. Ex parte Humber, 217 U.S.P.Q. 265, 266 (Bd. Pat. App. & Inter. 1981).

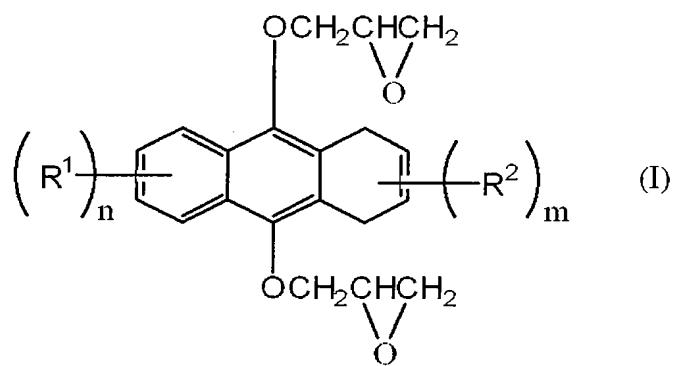
In this case, Applicants made a sealant epoxy-resin molding material using a dihydroanthracene epoxy resin compound in accordance with independent claim 1 of the above-captioned application, and compared it to a sealant epoxy-resin molding material made using an anthracene epoxy resin compound in accordance with Formula 9 of the Nakamura Document (Akagi Declaration, ¶¶ 18-21). Both sealant epoxy-resin molding materials were then tested for flame resistance (sec), spiral flow (cm), hardness when hot (ShoreD), molding shrinkage (%), gold-wire flow (%), and warping (mm) in accordance with the tests described in ¶¶ [0176] to [0178] of the above-captioned application, and glass transition temperature Tg (°C) was determined for each of the sealant epoxy-resin molding materials using a standard method known in the art (Akagi Declaration, ¶ 22). Thus, the presently claimed invention was compared to subject matter that was closer to that of the presently claimed invention than either the Ikezawa '548 Publication, or the Nakamura Document, which are believed to be the closest prior art.

The resulting data is tabulated in Table II of the Akagi Declaration. As evident from the data of Table II, the sealant epoxy-resin molding material made using dihydroanthracene epoxy resin according to claim 1 of the presently claimed invention exhibits substantially superior spiral flow, gold-wire flow, resistance to molding shrinkage, and warping properties compared to sealant epoxy-resin molding material made using the anthracene epoxy resin corresponding to Formula 9 of the Nakamura Document (Akagi Declaration, ¶¶ 22-24). This result was unexpected, and means that sealant epoxy-resin molding material made using dihydroanthracene epoxy resin has unexpectedly, substantially superior flowability and moldability characteristics over sealant epoxy-resin molding material made with anthracene epoxy resin (Akagi Declaration, ¶ 24).

In view of the experimental evidence submitted by Applicants, even assuming *arguendo* that the Examiner had established a prima facie case of obviousness (which is an invalid assumption), Applicants comparative data demonstrates that the presently claimed invention achieves substantially improved flowability and moldability characteristics over subject matter that is closer to the presently claimed invention than the closest prior art. Applicants have also adduced evidence to show that this result is unexpected. Therefore, absent evidence to the contrary, Applicants have adduced evidence of superior and unexpected results that is sufficient to overcome any prima facie case of obviousness alleged by the Examiner. In re Soni, 34 U.S.P.Q.2d 1684, 1687-88 (Fed. Cir. 1995).

III. CONCLUSION

The Examiner has failed to establish a prima facie case of obviousness against Applicants' claimed invention because neither the Ikezawa '548 Publication, the Nakamura Document, the Isshiki Patent, nor the AAAPA, either alone or in combination, teach or suggest "the epoxy resin (A) contains a compound represented by the following General Formula (I):



wherein...n is an integer of 0 to 4...and m is an integer of 0 to 6" as recited by independent claims 1 and 27. Thus, claims 1 and 27 are allowable. The remaining claims 2-12 and 14-26 each depend upon claim 1, either directly or indirectly, and are likewise allowable.

Furthermore, the Examiner has failed to establish both a legitimate reason to justify the combination of the Ikezawa ‘548 Publication, the Nakamura Document, the Isshiki Patent, and the AAAPA, and that a person of ordinary skill in the art would have enjoyed a reasonable expectation of success of arriving at Applicants’ claimed invention if the combination was made. More specifically, the Examiner has failed to demonstrate that the combination would result in a sealant epoxy-resin molding material that includes an “epoxy resin (A)” as recited by independent claims 1 and 27 because the Nakamura Document discloses only an anthracene epoxy resin and does not teach, or suggest, a dihydroanthracene epoxy resin as claimed.

Applicants have also submitted evidence to establish that (i) the Nakamura Document discloses anthracene epoxy resin but does not disclose dihydroanthracene epoxy resin, and (ii) sealant epoxy-resin molding material made using dihydroanthracene epoxy resin according to claim 1 exhibits unexpectedly and substantially superior flowability and moldability properties over sealant epoxy-resin molding material made using anthracene epoxy resin. Thus, even assuming *arguendo* that the Examiner had established a prima facie case of obviousness (which is an invalid assumption), Applicants’ evidence demonstrating unexpected and substantially superior flowability and moldability properties of the present invention over the closest prior art is sufficient to overcome the alleged prima facie case.

For all of the above reasons, claims 1-12 and 14-27 are in condition for allowance and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below-signed attorney for Applicants.

Respectfully submitted,

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